CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

1. A method of executing a linear algebra subroutine, said method comprising:

for an execution code controlling operation of a floating point unit (FPU) performing said linear algebra subroutine execution, unrolling an instruction to preload data into a floating point register (FReg) of said FPU, said unrolling causing said instruction to load data into said FReg to be inserted into a sequence of instructions that execute said linear algebra subroutine on said FPU.

2. The method of claim 1, wherein said instructions are unrolled repeatedly until the data loading reaches a steady state in which a data loading exceeds a data consumption.

3. The method of claim 1, wherein said linear algebra subroutine comprises a matrix multiplication operation.

4. The method of claim 1, wherein said linear algebra subroutine comprises a subroutine from a LAPACK (Linear Algebra PACKage).

5. The method of claim 4, wherein said LAPACK subroutine comprises a BLAS Level 3 L1 cache kernel.

6. An apparatus, comprising:

a memory to store matrix data to be used for processing in a linear algebra program;

a floating point unit (FPU) to perform said processing; and

a load/store unit (LSU) to load data to be processed by said FPU, said LSU loading said data into a plurality of floating point registers (FRegs),

wherein matrix data is preloaded into said FRegs prior to being required by said FPU.

7. The apparatus of claim 6, wherein said preloading is achieved by unrolling a loading instruction so that a load occurs every cycle until a preload condition has been satisfied.

8. The apparatus of claim 6, wherein said linear algebra program comprises a matrix multiplication operation.

9. The apparatus of claim 6, wherein said linear algebra program comprises a subroutine from a LAPACK (Linear Algebra PACKage).

10. The apparatus of claim 9, wherein said LAPACK subroutine comprises a BLAS Level 3 L1 cache kernel.

11. The apparatus of claim 6, further comprising:

a compiler to generate an instruction for said preloading.

12. A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of executing a linear algebra subroutine, said method comprising:

for an execution code controlling operation of a floating point unit (FPU) performing said linear algebra subroutine execution, unrolling an instruction to preload data into a floating point register (FReg) of said FPU, said unrolling causing said instruction to load data into said FReg to be inserted into a sequence of instructions that execute said linear algebra subroutine on said FPU.

13. The signal-bearing medium of claim 12, wherein said instruction is unrolled repeatedly until the data loading reaches a steady state in which a data loading exceeds a data consumption.

14. The signal-bearing medium of claim 12, wherein said linear algebra program comprises a matrix multiplication operation.

15. The signal-bearing medium of claim 12, wherein said linear algebra program comprises a subroutine from a LAPACK (Linear Algebra PACKage).

16. The signal-bearing medium of claim 15, wherein said LAPACK subroutine comprises a BLAS Level 3 L1 cache kernel.

17. A method of providing a service involving at least one of solving and applying a scientific/engineering problem, said method comprising at least one of:

using a linear algebra software package that computes one or more matrix subroutines, wherein said linear algebra software package generates an execution code controlling a load/store unit loading data into a floating point register (FReg) for a floating point unit (FPU) performing a linear algebra subroutine execution, such that, for an execution code controlling operation of said FPU, an instruction is unrolled to cause a preloading of data into said FReg;

providing a consultation for purpose of solving a scientific/engineering problem using said linear algebra software package;

transmitting a result of said linear algebra software package on at least one of a network, a signal-bearing medium containing machine-readable data representing said result, and a printed version representing said result; and

receiving a result of said linear algebra software package on at least one of a network, a signal-bearing medium containing machine-readable data representing said result, and a printed version representing said result.

18. The method of claim 17, wherein said linear algebra subroutine comprises a subroutine from a LAPACK (Linear Algebra PACKage).

19. The method of claim 18, wherein said LAPACK subroutine comprises a BLAS Level 3 L1 cache kernel.